

INTERMOUNTAIN STATION

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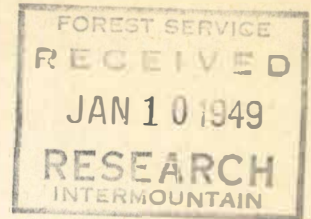
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CENTRAL STATES FOREST EXPERIMENT STATION

FOREST UTILIZATION SERVICE

QUARTERLY PROGRESS REPORT

3rd Quarter 1948 (July, August, September)

SEASONING

The solvent seasoning process using perchlorethylene, reported in our 2nd Quarter Report as being under consideration by the Union Fork & Hoe Company, has apparently failed to produce the desired results experimentally. The company has decided therefore against using the process to season and color white ash handle stock. An official of the company told Brundage that the process did not give uniform drying in the short period which is supposed to be its ~~ma~~ major advantage in comparison with other artificial seasoning methods. Variations in moisture content of the individual pieces cannot gradually be leveled off to a fairly uniform final MC as can be done in a conventional dry kiln by appropriate humidity control. Also the claim that wood can be color-stained throughout simply by introducing a dye into the solvent itself, was said not to have been borne out satisfactorily by tests in the pilot plant at Chicago.

The Executive Secretary of the Associated Cooperage Industries of America, Inc., requested the Madison Laboratory and the Central States Station to undertake, if possible, the same kind of project covering seasoning of slack cooperage as that initiated about a year ago for the tight-cooperage industry. The acute shortage of wood-seasoning specialists at Madison would not permit the Laboratory to make any commitments that such a project could be started this fiscal year. Mr. Rietz of the Forest Products Laboratory suggested that a meeting with industry representatives might be helpful. After an FUS conference with Secretary Hankerson at St. Louis in September, it was decided that a good first approach would be a preliminary observational trip covering two or three slack-stave producers and two slack-cooperage factories in the Central States jointly by Mr. Hankerson and Brundage during the first Quarter of 1949. Mr. Hankerson has inspected several occurrences of slack-container failures during the past year - most of them involving shipments of powdered milk - which he believes are chargeable principally to improper seasoning. Following this trip a memorandum will be prepared for the Laboratory summarizing the information gathered and delineating the need, if any, for ~~more~~ more intensive study by Laboratory staff men. The Laboratory will then give further consideration to the proposed project. There is, of course, the possibility that the observation trip may reveal some "bugs" in slack-cooperage industry practices other than seasoning which appear to be contributing causes of slack-container failures. If so, these will be brought to the attention of Madison Laboratory Divisions other than Timber Physics.

The Lennox Furnace Company, Marshalltown, Iowa, is interested in determining the feasibility of adding lumber dry-kiln equipment to their present line of space-heating and air-conditioning apparatus. After conferring with some of

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the company engineers who had had some previous correspondence with the Madison Laboratory, it was readily apparent that they needed complete information regarding all factors involved in the seasoning of wood. Moisture gradient, equilibrium moisture content, shrinkage and other fundamentals were briefly explained and several processed reports on lumber seasoning subjects were sent to the engineers from Madison at the request of FUS. Further contact with the Lennox engineers will be made next Quarter by one of the Laboratory kiln-drying specialists.

Some time ago the Thayer Action Company of Rockford, Illinois, was having trouble from warping of a maple component in their piano-action assemblies. The distortion causing sticking would occur occasionally one or two months or longer after delivery. The manager had inquired of FUS whether any pre-treatment might help and was considering a trial of acetylated wood. However, after further investigation of kiln drying routine, it had been found that the trouble could be eliminated by placing no stock in the kilns which was not first thoroughly air-dried. This finding bore out the original FUS diagnosis that occasionally boards might come out of the kilns with mild seasoning stresses which might not be evident in the factory at the time of manufacture, but might show up later in delayed warping difficulties.

The Extension Forester for the state of Iowa has requested Madison Laboratory and FUS cooperation in connection with a series of six sawmill-operator training meetings scheduled for early October. Talks on lumber seasoning will be given at three of the meetings by Kimball of the Madison Laboratory and at the other three by Brundage, who conferred with Messrs. Rietz and Kimball at the Laboratory in September regarding the general subjects to be discussed.

WOOD SUGAR

Several field contacts with companies and individuals interested in wood sugar were made during the Quarter. At the Quaker Oats Company feed mills in Cedar Rapids, Iowa, where Brundage called on September 21 to inquire about oak-molasses shipped there by the FPL in mid-July, it was found that the drum had been received in good order but had not yet been opened. The head of the company's feed research department had not yet returned from a trip to Europe, which explained the long storage. It was found that a heavy black crust about 1/2 inch thick had formed over the surface during the 72 days the molasses had been stored undisturbed. The manager of the feed-mixing department said such crust formation would present a serious problem in tank storage. At the company's Chicago office, a talk with the manager of the purchasing department disclosed that the current price being paid for cane molasses in tank cars delivered to the feed-mixing mill at Cedar Rapids was \$46.50 a ton. The company buys no beet sugar molasses because they consider it to be less palatable than cane. Another interesting item picked up on this visit is that the Quaker Oats Company has been making furfural from corncobs for the past four years and grinding the residue into fiber for mixing with stock feeds in small amounts purely for its bulk effect...At the Arcady Farms Milling Company in Chicago, it was learned that a small sample of Douglas fir molasses had been used in a chick feeding experiment to determine its effect on droppings. A research assistant had made a mistake in carrying out the working plans out-

lined by his chief just before the latter left on an extended trip. The experiment was inconclusive, therefore, and will have to be repeated...A Chicago corporation called the Branigar Organization is interested in financing a plant to make wood molasses. When they inquired about equipment prices in a letter to a manufacturer in Cincinnati, the latter advised them not to consider erecting such a plant at this time because there was no established market for wood molasses. The president of the corporation was informed by Brundage regarding the status of feeding experiments and furnished with FPL reports concerning wood hydrolysis products...A conference with Animal Husbandry staff men at Iowa State College disclosed that their feed research program was so crowded with projects involving Iowa farm products and by-products that it would be impossible to work in any wood molasses feeding tests this year or the first part of next year. Very little cane molasses has been used by Iowa farmers because of the abundant local supply of corn generally available. The door was left open for later reconsideration of wood molasses experiments, however, and we plan to confer with the same staff men again during the 2nd Quarter of 1949 when we hope additional molasses for new tests will be available from the new Madison pilot plant. Dr. Harris of the Madison Laboratory has suggested that hog-feeding experiments be given first priority in any tests which might be made by Iowa State College because Mr. Catron of the College's Animal Husbandry Department is recognized as a national authority on hog feeding. Two other feeding tests which Dr. Harris would like to see repeated in Central States territory are the use of wood molasses in the finish-feeding of beef cattle enroute from western ranges to the stock yards, and dairy-cow tests to determine the effect of wood molasses on yield, flavor and quality of milk produced.

MODIFIED WOOD

The Crane Company, Chicago, inquired last year about compreg with the idea of testing it as a material for patterns and coreboxes at their foundry. Natural wood has too short a life from the effects of moisture and abrasion by foundry sand for the company's mass-production applications so metal has long been used. When a call was made at the factory in September, it was learned the company's research department had come to the conclusion that compreg is impracticable for the applications above noted. If any other FUS unit knows about usage of compreg in foundries, the Central States Station would appreciate being informed of the specific applications.

PULP AND PAPER

A representative of the Champion Paper & Fibre Company conferred with FUS at the Station regarding potential sources of manufacturing-plant wood waste wanted for a new mill the company proposes to build at Hamilton, Ohio for the manufacture of high grade book paper. All-hardwood waste is preferred, but up to 15 percent of softwood material will be accepted if necessary to make out the 425 tons a day needed. The use of coarse bark-free veneer mill and remanufacturing waste will be economical, they believe, if a steady supply can be secured within a 150-mile radius around the plant. The paper mill now operated by Champion at Hamilton uses pulp shipped in from the south east...Interest in changing from straw to wood fibre for making corrugating paper on the part of

an Indiana mill which has been mentioned in previous progress reports, has apparently subsided. On a visit to the mill in September, Brundage was told that the price of straw in the storage yard has dropped to an average of \$14 to \$16 a ton (\$18.75 early in 1948) and the prospect for future supplies looks good. The management is giving serious consideration to the installation of the Morley Continuous Pulper (Made in England) in remodeling their old rotary-digester mill.

METAL DETECTORS

A talk on detecting metal in trees and logs was given by Brundage at the Annual Convention of the National Shade Tree Conference in Milwaukee on August 26. Shade tree operators who cut and remove trees in parks and residential areas now use power saws extensively and have ruined many a sawchain, or other high speed cutting tool by striking hidden hardware. They are particularly interested in finding a low-priced device that will disclose the presence of non-reinforced concrete used years ago for filling cavities resulting from decay and now completely healed over. Types of instruments which might meet the need are (1) a radio transceiver, suggested by the Allied Radio Company in Chicago, and (2) a modification of the Vibroground Geophysical Prospecting Instrument made by Associated Research, Inc., also in Chicago. These possibilities have been reported to the Secretary of the N.S.T.C. but as far as known the organization has not yet attempted to have any experimental apparatus made up for trial...In our 2nd Quarter Report, mention was made of a special non-magnetic log rollway for searching walnut logs with the SCR-625 Army mine detector which was to be built with timbers on a concrete base at a veneer mill in Kansas City. The rollway has been built and the searching for hidden metal is working out in fine shape. No reinforcing steel was used in the base. When the operator was unable to obtain a Burgess XX69 or a Signal Corps. BA 38 B battery for his SCR-625 detector set in a hurry, two Eveready Minimax radio batteries were connected in series, one 45V. and one $67\frac{1}{2}$ V., and performance was no different than with the special battery designed to fit between the B contacts in the amplifier case. The total voltage of $112\frac{1}{2}$ is only a little more than the BA 38's 105 volts, causing no perceptible difference in tone or tuning. The two "Minimax" batteries are small enough to fit snugly inside the amplifier case.

Day demonstrated the SCR-625 on August 31 and September 1 at the Annual Meeting of the Railway Tie Association at White Sulphur Springs, West Virginia. He also demonstrated it at Schenectady, New York on September 6 in connection with the Television Preview of Fred Simmons' Logging Show on Station WGY. The detector was also loaned to the Ohio Division of Forestry for demonstration at a Soil Conservation field day in southern Ohio on September 21 and 22. We understand this demonstration resulted in the sale of several instruments to the City of Columbus for locating metal in American elm killed by the Dutch elm disease.

LOGGING EQUIPMENT DEMONSTRATION

Much of Day's time during the Quarter was devoted to planning for the logging equipment show scheduled for October 10 at the Kaskaskia Experimental Forest in southern Illinois. This will be the first show of this character in the mid-west and advance plans indicate much interest on the part of both manufacturers

and operators. It will be jointly sponsored by the Carbondale, Illinois Branch of the Station and the Extension Service, University of Illinois. FUS will handle contacts with industry and the equipment to be demonstrated; the Carbondale Branch will handle local arrangements and preparation of the demonstration site; and Extension Forester L. B. Culver will handle radio and press contacts and publicity in general.

SMALL WOOD USING PLANTS

To satisfactorily answer the many requests received by the Laboratory from veterans and others seeking information on the possibilities of small wood using plants built up around small sawmills. Fred Malcolm of the Laboratory Division of Industrial Investigations has been studying the equipment organization products and capitalization of typical plants. During August, he and Day visited a number of such plants in Ohio.

GENERAL

Messrs. Rietz and Dunlap, Laboratory Division of Timber Physics, visited five plants in the Louisville area with Brundage on August 16 and 17. Faster kiln drying of airdry oak lumber was discussed at Gamble Brothers with President Dosker and the Diehl-Desker continuous HF edge gluing machine was observed in operation. Other plants visited were the Inman Furniture Company (HF edge gluing machine), the Girdler Corporation (HF generator manufacturers), Louisville Cooperage Company (seasoning of white oak staves and manufacture of tight barrels) and Mengel Brothers (discussion of moisture content control procedures in remanufacturing plant)...Field contacts during the Quarter by Brundage not elsewhere mentioned were made with Region 9 RO personnel, Madison Laboratory staff men (discussions of practically all items in the CS FUS program other than logging and milling), Purdue University Forestry Department (wood molasses and general utilization subjects of mutual interest), University of Missouri Forestry School staff (utilization problems of Missouri) and some 20 companies or individuals on the FUS problem-analysis list. Worthy of special mention are the hardboard panels being made by the Curtis Company, Clinton, Iowa, from ponderosa pine waste mixed with phenolic resin binder; a new cooperative project undertaken by the FPL with Farley and Loetscher, Dubuque, Iowa, to make board experimentally from their plant waste, and a sample of plywood-faced corncob core panels (short cross sections of corncobs), seen at the Huttig Sash & Door factory in St. Louis, which has been developed in Belgium.

Assistance in locating sources of lumber supplies and in finding markets for lumber continues to be an important function for the unit. The sawmill and secondary industry lists prepared during the war for the WPB have proven invaluable in this respect. Plans are being made to bring these lists up to date. The assistance of farm and extension foresters, professional organizations such as the Illinois Technical Foresters Association and others including trade associations will probably be solicited.

MEETINGS

Members of the unit attended the following meetings during the Quarter in addition to those mentioned in the body of this report:

Railway Tie Association, White Sulphur Springs, West Virginia, August 30, 31 and September 1;

Northeastern Logging Equipment Show, Cooperstown, New York, September 8.

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